

TA-N110

SERVICE MANUAL

*US Model
AEP Model
UK Model
E Model*



SPECIFICATIONS

Audio power specifications

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 100 watts per channel minimum RMS power, with no more than 0.08% total harmonic distortion from 250 milliwatts to rated output

Other specifications

Continuous RMS power output
(both channels driven simultaneously)

(US model)
Stereo: 50 W + 50 W
(6 ohms, 0.08%, 20 Hz - 20 kHz)
Mono: 100 W (8 ohms, 0.08%, 20 Hz - 20 kHz)
(Models for Except US)
Stereo: 50 W + 50 W
(6 ohms, 0.08%, 20 Hz - 20 kHz)
Mono: 100 W (6 ohms, 0.08%, 20 Hz - 20 kHz)

Dynamic power

(US model)
75 W + 75 W (6 ohms)
(Models for Except US)
85 W + 85 W (8 ohms)

Power bandwidth (IHF)

12 Hz - 40 kHz (6 ohms, THD 0.12%)
(US model only)

Frequency response

STEREO/FLAT: 5 Hz - 200 kHz, +0/-3 dB
3D: 5 Hz - 80 Hz, +0/-3 dB (12 dB/Oct.)

Input sensitivity

STEREO: 180 mV (50 kohms)
3D: 110 mV (100 kohms)
FLAT: 180 mV (100 kohms)

Signal-to-noise ratio

105 dB (input shorted)

Speaker output

(US model)
Stereo: 6 - 16 ohms
Mono: 8 - 16 ohms
(Models for Except US)
Stereo/mono: 6 - 16 ohms

General

System Complementary Darlington SEPP power amplifier, with all stages direct coupled

Power requirements

US model: 120V AC, 60Hz
AEP, WG model: 220V - 50/60Hz
UK model: 240V - 50/60Hz
E model: 120, 220, 240V - 50/60Hz

Power consumption

US model: 110 watts
Models for Except US: 140W

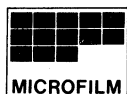
Dimensions

US model:
Approx. 470 x 120 x 265 mm (w/h/d)
(17 x 4 3/4 x 10 1/2 inches)
Models for Except US:
Approx. 430 x 120 x 265 mm (w/h/d)
(17 x 4 3/4 x 10 1/2 inches)
including projecting parts and controls

Weight

US model:
Approx. 5.9 kg (13 lb 1 oz), net
Models for Except US:
Approx. 5.3 kg (11 lb 11 oz), net

Design and specifications subject to change without notice.



STEREO POWER AMPLIFIER
SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

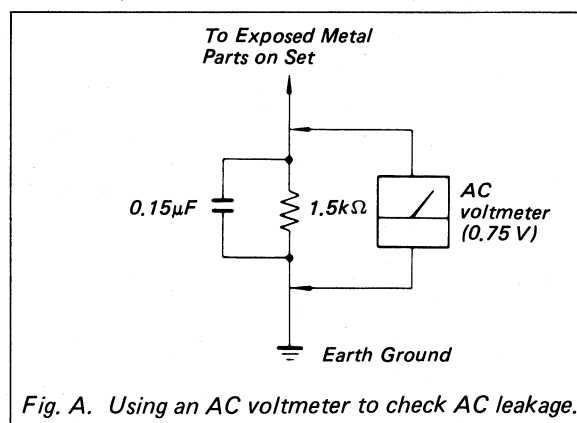
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

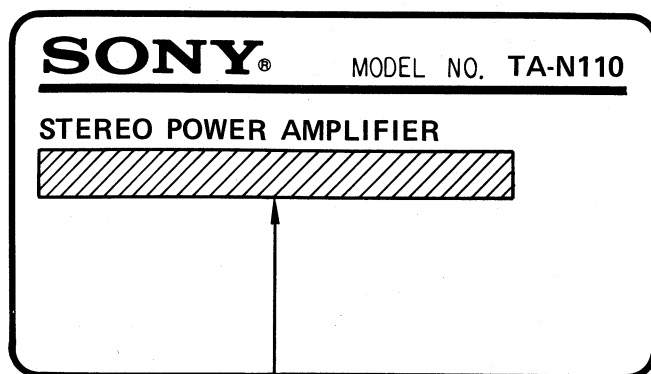
1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



MODEL IDENTIFICATION

— Specification Label —

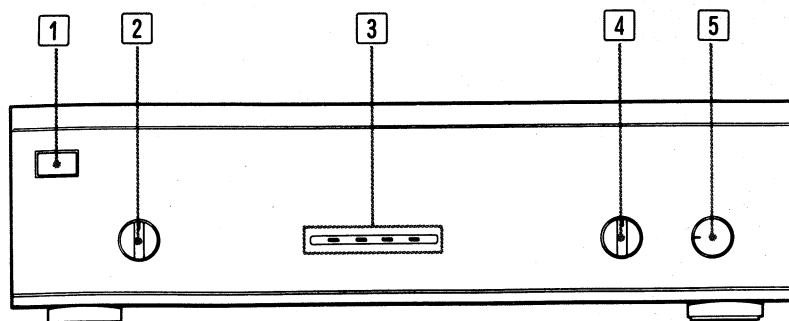


US model:	AC: 120V 60Hz	110W
AEP, WG model:	AC: 220V~50/60Hz	140W
UK model:	AC: 240V~50/60Hz	140W
E model:	AC: 120, 220, 240V~50/60Hz	140W

(WG model: West Germany)

SECTION 1 OUTLINE

1-1. LOCATION AND FUNCTION OF CONTROLS



(Side panels are attached to the US model.)

1 POWER switch

2 SPEAKERS selector

Selects speaker system to be used.

(When MONO is selected, the component connected to the MONO INPUT jack will be selected automatically as an input source.)

MONO : To select the speaker system connected to the MONO SPEAKER terminals (sub woofer or center speaker).

A : To select the speaker system connected to the SPEAKERS A terminals.

B : To select the speaker system connected to the SPEAKERS B terminals.

3 MONO/STEREO input indicators

MONO : Lights up when the SPEAKERS selector is set to MONO.

STEREO 1 to 3 : Lights up to show the input component selected by the STEREO INPUT when the SPEAKERS selector is set to either A or B.

4 STEREO INPUT selector

Selects the component to be played among the components connected to the STEREO INPUT 1 to 3 jacks on the rear panel.

5 ATTENUATOR (volume) control

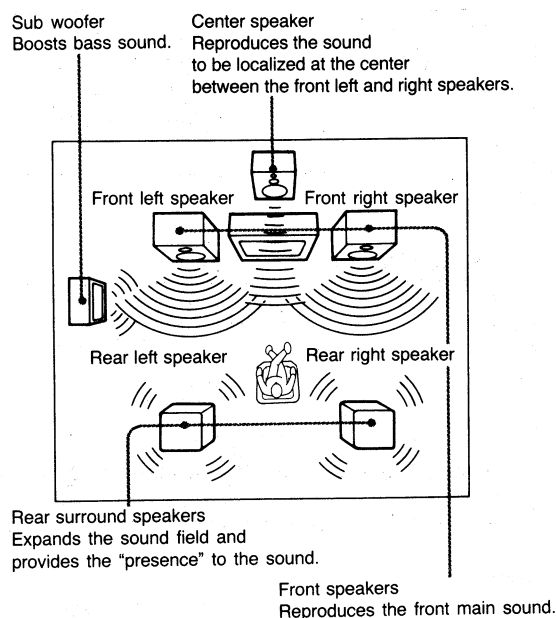
Adjusts the sound level of the speaker connected to TA-N110.

1-2. OVERVIEW

The TA-N110 is a power amplifier with selectable stereo/mono operation mode. It is suitable for use in a surround sound system. When the TA-N110 is connected to the surround processor, it can be used as follows.

- Stereo power amplifier for driving the rear surround speakers
- Stereo power amplifier for driving the front speakers
- Monaural power amplifier for driving the sub woofer.
- Monaural power amplifier for driving the center speaker.

As the TA-N110 is operable with an input voltage lower than normal power amplifier, it can be used also as an integrated amplifier or 3D system amplifier.



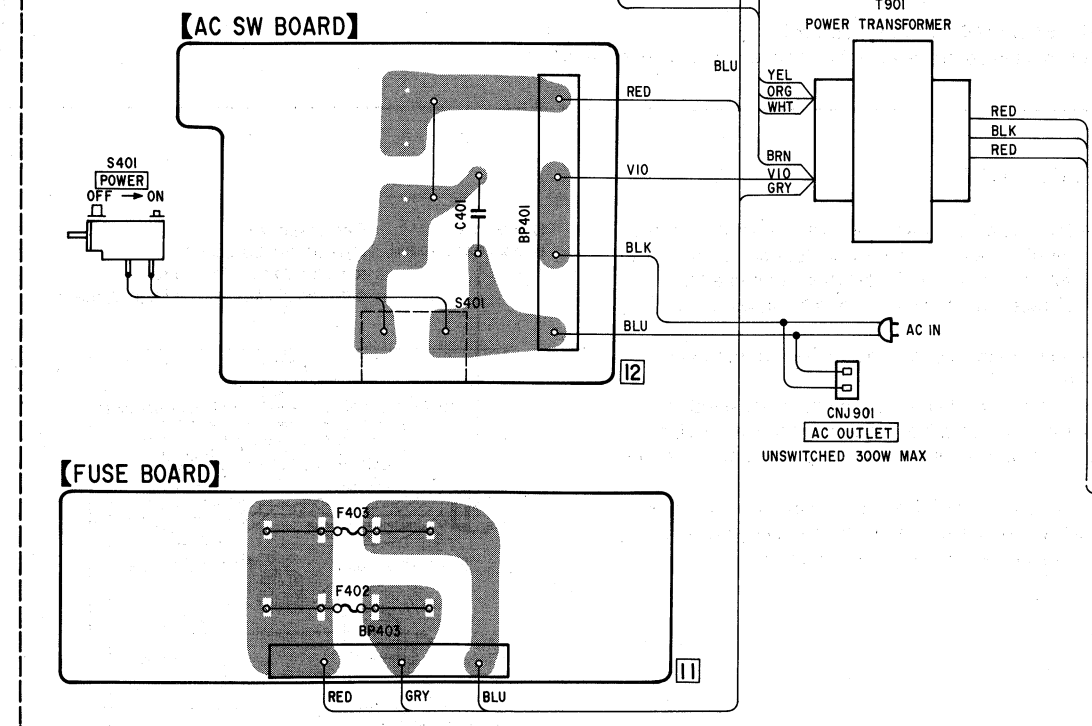
2-1. PRINTED WIRING BOARDS

● See page 10 for Semiconductor Lead Layouts.

● Semiconductor Location

Ref. No.	Location
D101	D-18
D102	D-17
D103	H-18
D104	B-18
D105	G-19
D106	E-18
D151	G-17
D152	G-18
D301	E-12
D302	E-14
D501	A-12
D502	A-12
D503	A-13
D504	A-13
IC101	E-16
IC102	C-18
IC103	H-21
IC104	G-22
IC105	G-21
Q101	D-17
Q102	F-18
Q104	C-17

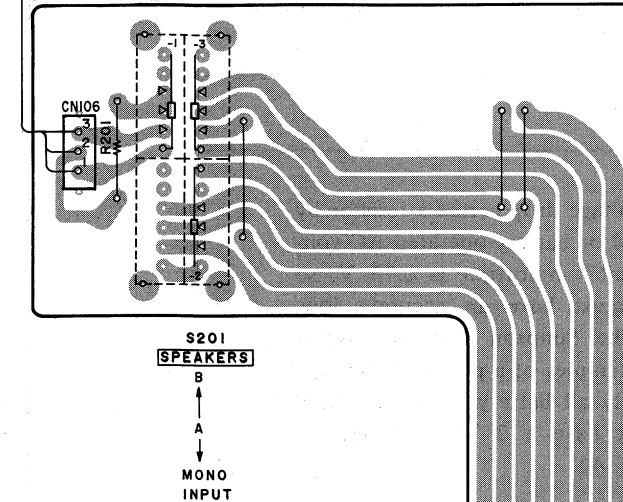
E MODEL



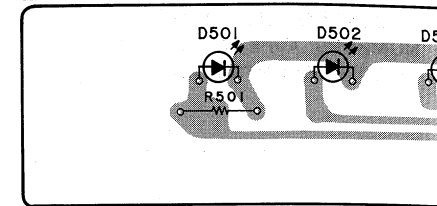
Note:

- ○ : parts extracted from the component side.
- : Pattern on the side which is seen.

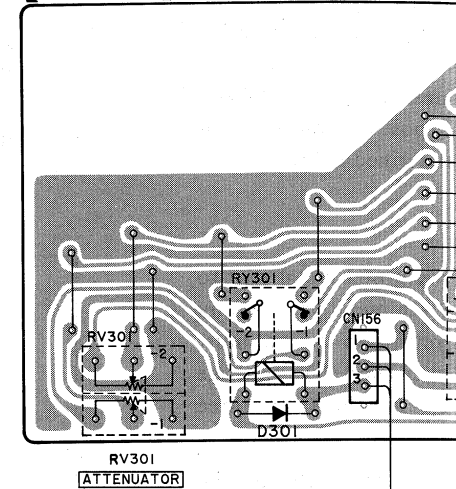
【SP BOARD】



【LED BOARD】

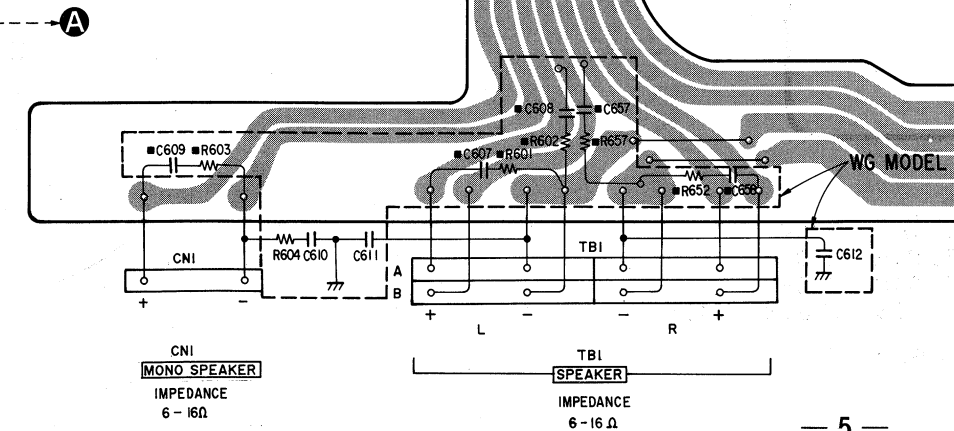
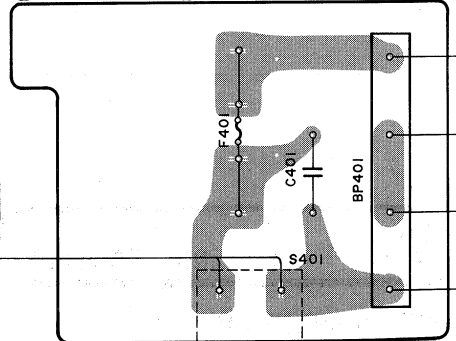


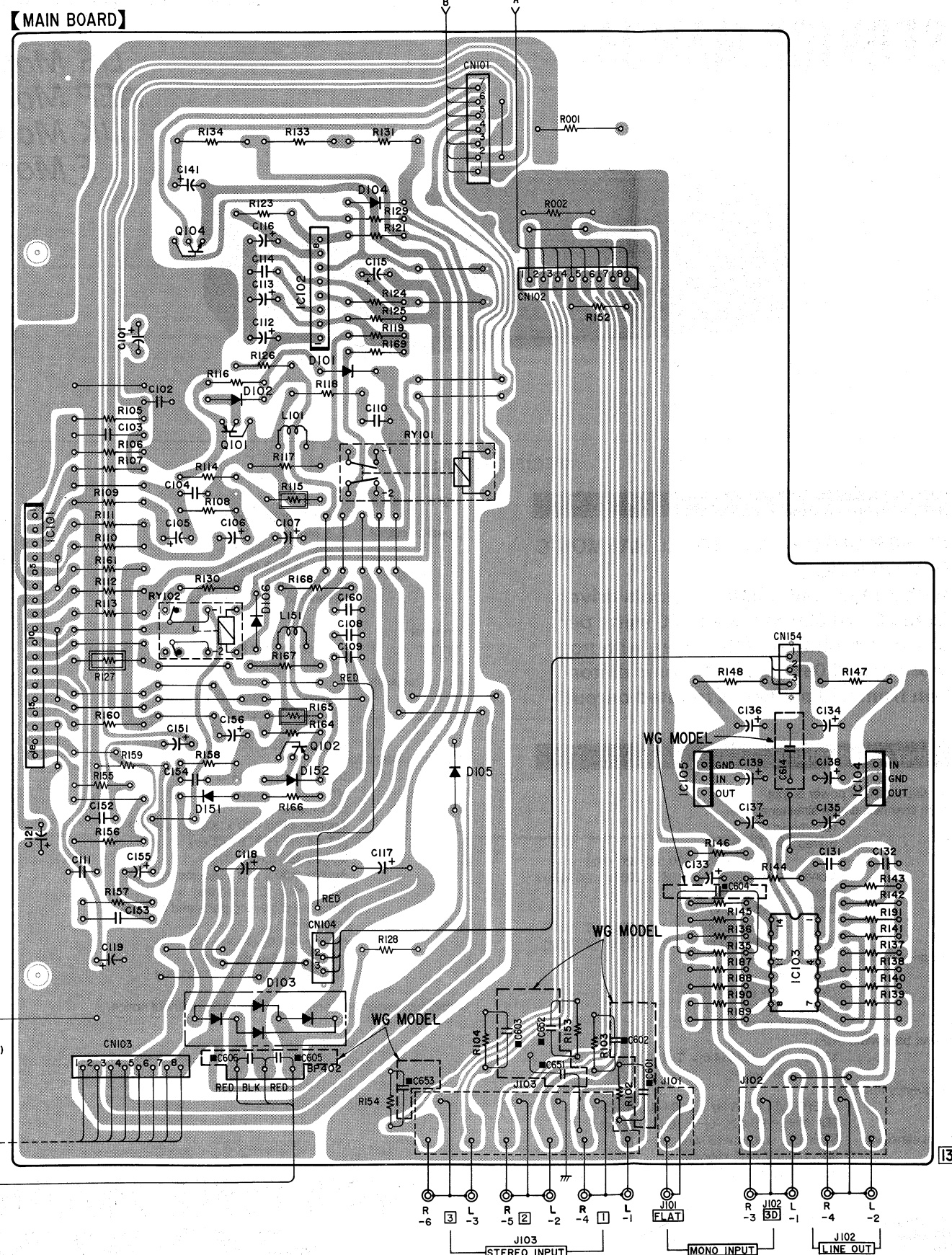
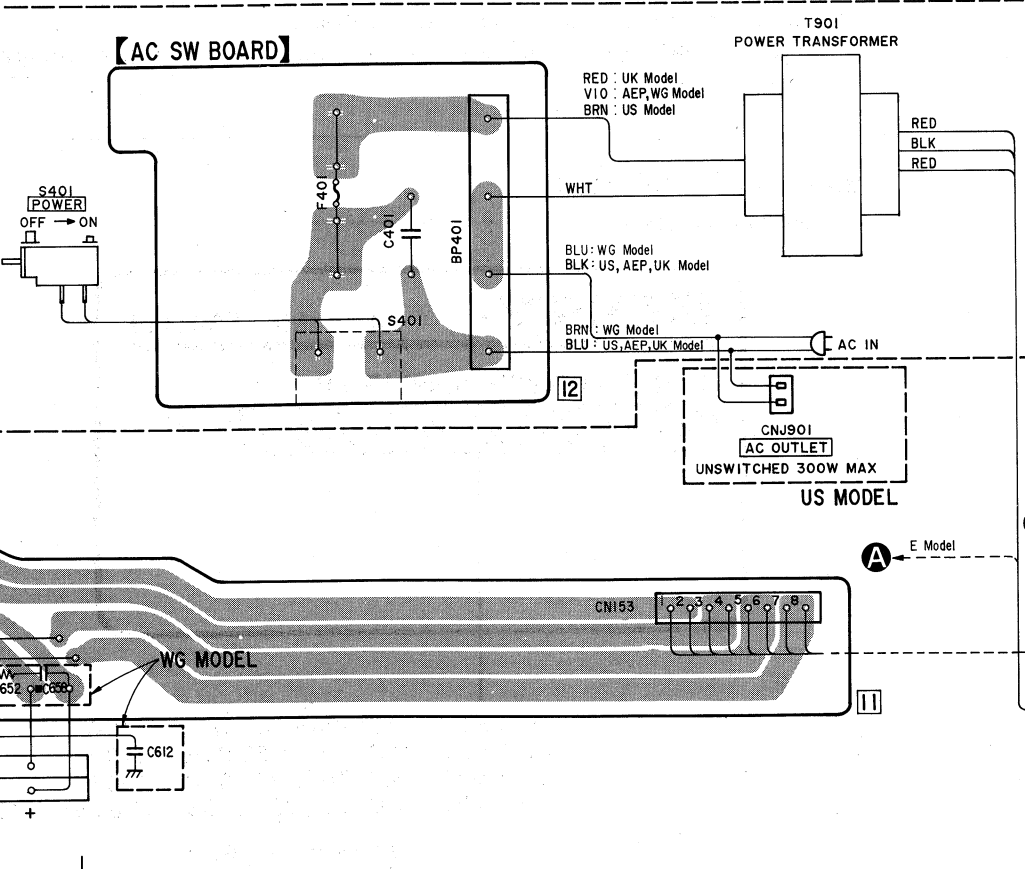
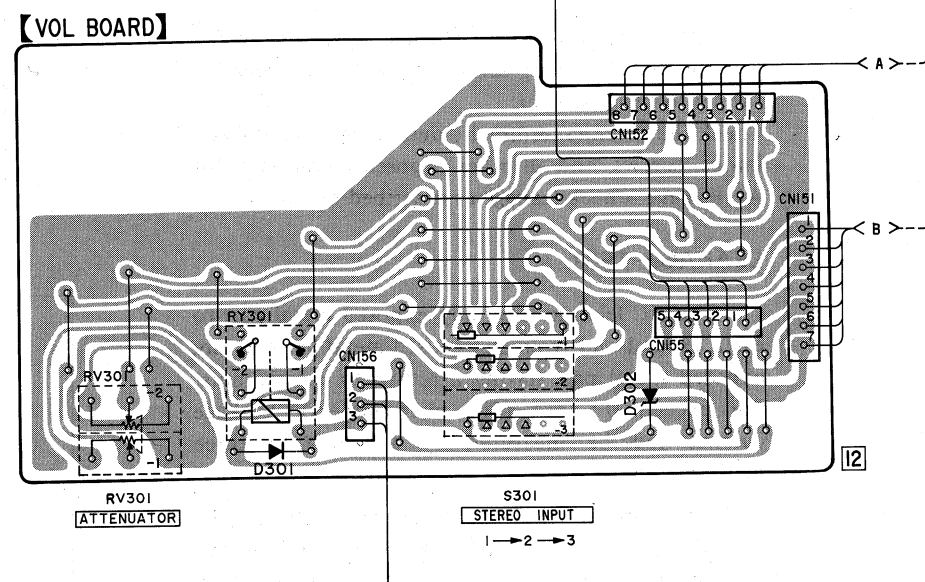
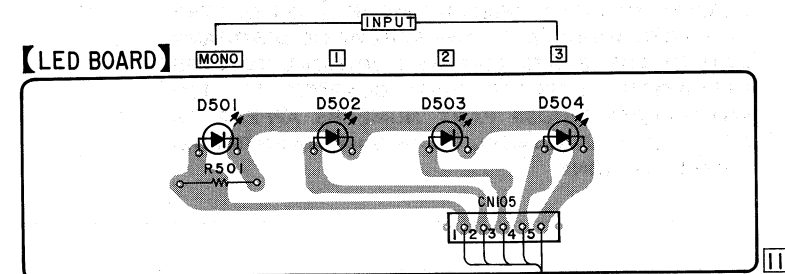
【VOL BOARD】



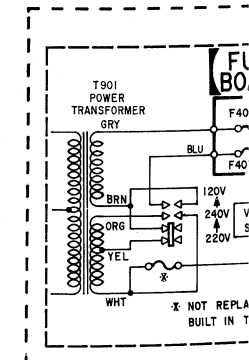
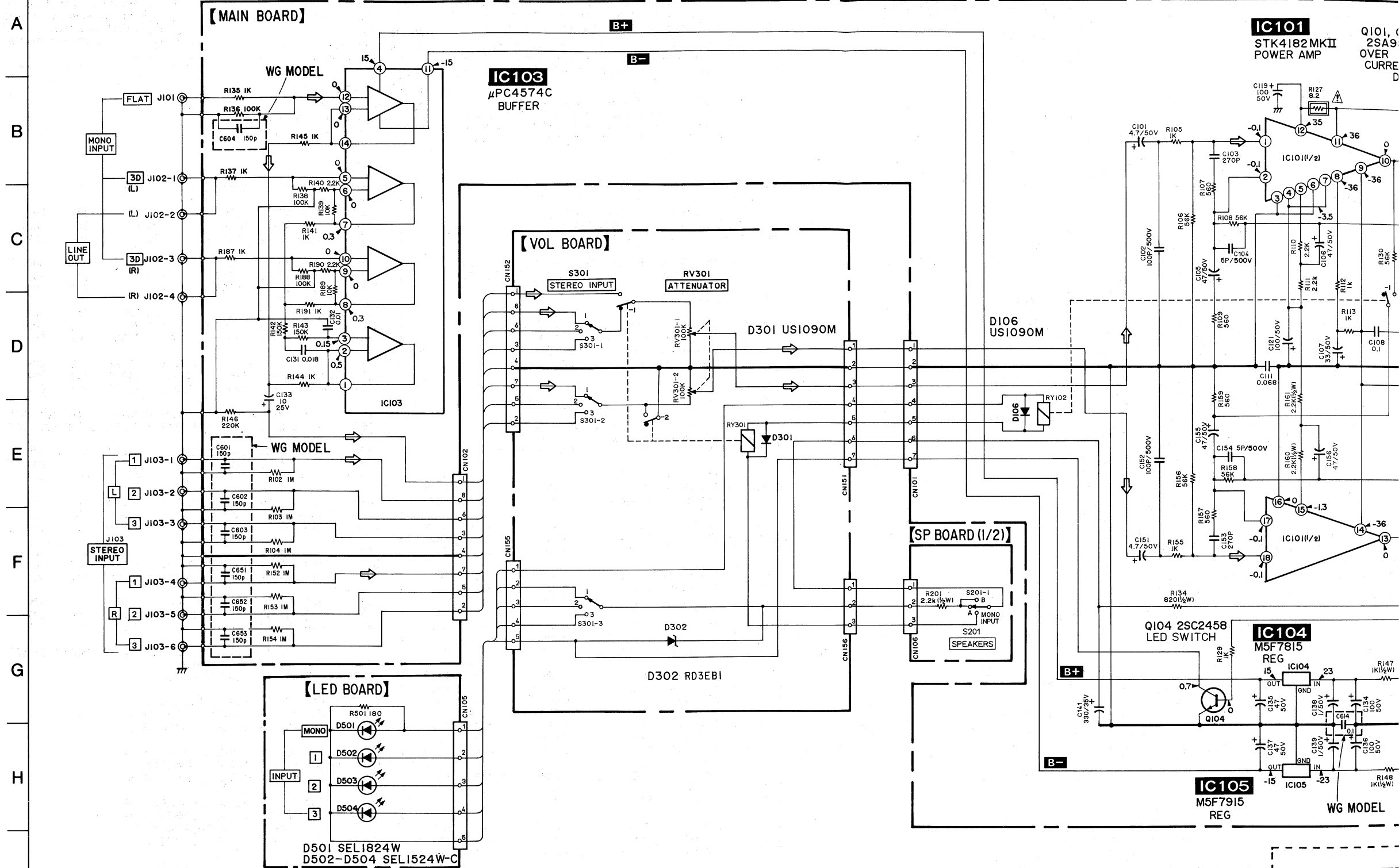
EXCEPT E MODEL

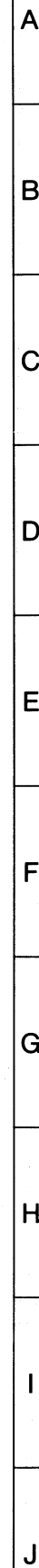
【AC SW BOARD】









2-2. SCHEMATIC DIAGRAM • See page 10 for IC block diagram.

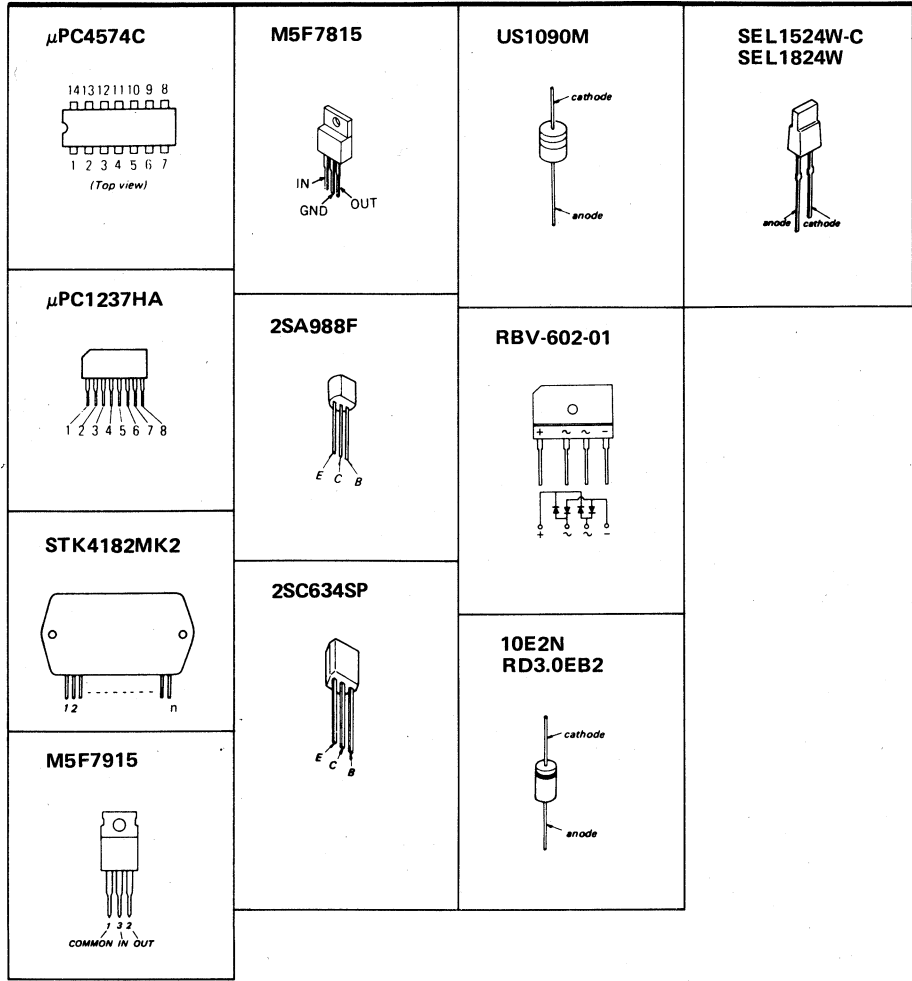




- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
-  : nonflammable resistor.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (50 $\text{k}\Omega/\text{V}$).
Voltage variations may be noted due to normal production tolerances.
- Signal path.
 : SOUND
- Switches

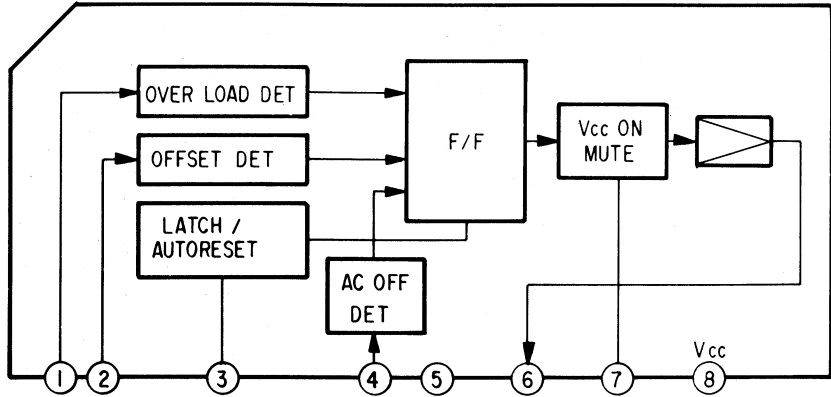
Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

● Semiconductor Lead Layouts



● IC BLOCK DIAGRAMS



IC103 μPC1237HA

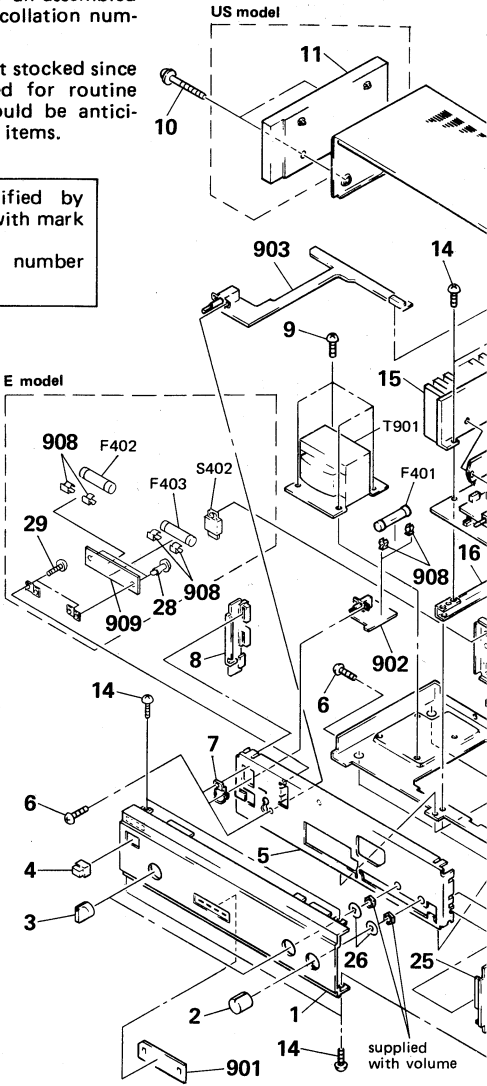


SECTION 3 EXPLODED

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, part number suffix -XX and -X are different from the parts specified in the set.

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	A-4323-003-A	PANEL ASSY		29	7-685-1		
2	4-916-746-01	KNOB (DIA.21)		30	7-685-8		
3	4-916-745-01	KNOB (DIA.21)		31	7-621-8		
4	4-917-460-01	KNOB, POWER		32	4-887-7		
5	*4-921-370-03	CHASSIS, SUB		901	*1-626-6		
6	7-682-548-04	SCREW +BVT 3X8 (S)		902	*1-626-6		
7	*4-921-360-01	BRACKET (SW)		903	*1-626-6		
8	*4-921-365-01	PANEL (LEFT), SIDE		904	*A-4388-		
9	7-682-560-04	SCREW +BVT 4X6 (S)		905	*1-626-6		
10	3-704-366-01	(EXCEPT US)...SCREW (CASE)(M3X8)		906	△.1-559-8		
	3-721-342-11	(US).....SCREW, SIDE WOOD			△.1-556-0		
11	X-4904-486-1	PLATE (LEFT) ASSY, SIDE			△.1-556-0		
12	*3-327-853-41	CASE			△.1-555-7		
13	X-4904-485-1	PLATE (RIGHT) ASSY, SIDE		908	1-533-1		
14	3-703-685-21	SCREW (+BV 3X8)		909	*1-628-3		
15	*4-921-322-01	HEAT SINK (A)		△CNJ901.1-526-7			
16	*4-921-314-01	BRACKET (P)		△CNJ901.1-526-8			
17	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3					
18	*3-703-244-00	(EXCEPT E)...BUSHING (2104), CORD		F401	△.1-532-2		
	*3-703-571-11	(E).....BUSHING (S)(4516), CORD		F403	△.1-532-5		
19	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S					
20	*4-921-359-11	(US)....PANEL, BACK		F402	△.1-532-2		
	*4-921-359-21	(E)....PANEL, BACK		F403	△.1-532-2		
	*4-921-359-31	(AEP)....PANEL, BACK		S402	△.1-570-3		
	*4-921-359-41	(WG)....PANEL, BACK					
	*4-921-359-51	(UK)....PANEL, BACK					
22	9-911-843-XX	CUSHION		T901	△.1-449-4		
24	X-4911-201-1	(US,E).....FOOT ASSY					
	X-4885-935-1	(AEP,WG,UK)....FOOT ASSY		T901	△.1-449-4		
				T901	△.1-449-4		
				T901	△.1-449-4		
25	*4-921-364-01	PANEL (RIGHT), SIDE					
26	3-533-938-00	CLOTH					
28	4-812-134-00	(E)....RIVET NYLON, 3.5					

SECTION 3 EXPLODED VIEW

Parts with no reference exploded views are not

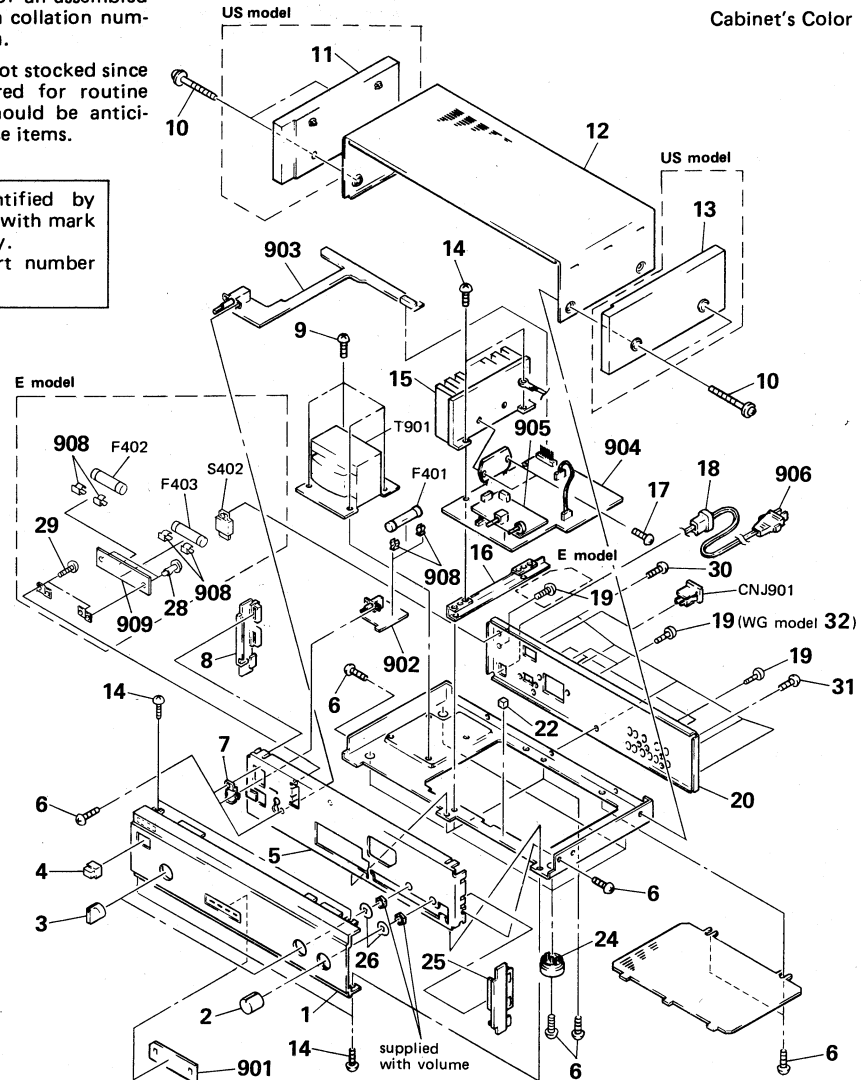
on parts of an assembled with a collation number column.

"*" are not stocked since delay required for routine delay should be anticipated when ordering these items.

Parts identified by dotted line with mark for safety. with part number

Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

Color Indication of Appearance Parts Example:
(RED) ... KNOB, BALANCE (WHITE)
↑ Cabinet's Color ↑ Parts Color



Part No.	Description	Remarks	No.	Part No.	Description	Remarks
A-4323-003-A	PANEL ASSY		29	7-685-134-19	(E)...SCREW +P 2.6X8 TYPE 2 N-S	
4-916-746-01	KNOB (DIA.21)		30	7-685-872-09	SCREW +BVTT 3X8 (S)	
4-916-745-01	KNOB (DIA.21)		31	7-621-849-00	SCREW, TAPPING	
4-917-460-01	KNOB, POWER		32	4-887-711-21	(WG)...SCREW, TERMINAL, CLAW, +BVTP	
4-921-370-03	CHASSIS, SUB					
7-682-548-04	SCREW +BVTT 3X8 (S)		901	*1-626-604-11	PC BOARD, LED	
4-921-360-01	BRACKET (SW)		902	*1-626-605-11	PC BOARD, AC SW	
4-921-365-01	PANEL (LEFT), SIDE		903	*1-626-603-11	PC BOARD, SP	
7-682-560-04	SCREW +BVTT 4X6 (S)		904	*A-4388-797-A	(EXCEPT WG)...MOUNTED PCB, MAIN	
3-704-366-01	(EXCEPT US)...SCREW (CASE)(M3X8)		905	*A-4388-799-A	(WG)...MOUNTED PCB, MAIN	
3-721-342-11	(US)...SCREW, SIDE WOOD					
X-4904-486-1	PLATE (LEFT) ASSY, SIDE		906	*1-559-819-11	(US)...CORD, POWER	
3-327-853-41	CASE			*1-556-091-00	(E)...CORD, POWER	
X-4904-485-1	PLATE (RIGHT) ASSY, SIDE			*1-556-035-00	(UK)...CORD, POWER	
3-703-685-21	SCREW (+BV 3X8)			*1-555-750-00	(AEP,WG)...CORD, POWER	
4-921-322-01	HEAT SINK (A)		908	1-533-183-11	HOLDER, FUSE	
4-921-314-01	BRACKET (P)		909	*1-628-354-00	(E)...PC BOARD, FUSE	
7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3					
3-703-244-00	(EXCEPT E)...BUSHING (2104), CORD					
3-703-571-11	(E)...BUSHING (S)(4516), CORD					
7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S					
4-921-359-11	(US)...PANEL, BACK					
4-921-359-21	(E)...PANEL, BACK					
4-921-359-31	(AEP)...PANEL, BACK					
4-921-359-41	(WG)...PANEL, BACK					
4-921-359-51	(UK)...PANEL, BACK					
9-911-843-XX	CUSHION					
X-4911-201-1	(US,E)...FOOT ASSY					
X-4885-935-1	(AEP,WG,UK)...FOOT ASSY					
4-921-364-01	PANEL (RIGHT), SIDE					
3-533-938-00	CLOTH					
4-812-134-00	(E)...RIVET NYLON, 3.5					

SECTION 4 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF: μ F, PF: μ F.

RESISTORS

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORS

In each case, U: μ , for example:

UA...: μ A..., UPA...: μ PA...,
UPC...: μ PC, UPD...: μ PD...

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
901	*1-626-604-11	PC BOARD, LED	C151	1-123-369-00	ELECT 4.7MF 20% 50V
902	*1-626-605-11	PC BOARD, AC SW	C152	1-107-169-00	MICA 100PF 5% 500V
903	*1-626-603-11	PC BOARD, SP	C153	1-162-287-31	CERAMIC 270PF 10% 50V
904	*A-4388-797-A	(EXCEPT WG)...MOUNTED PCB, MAIN	C154	1-107-026-00	MICA 5PF 0.5PF 500V
	*A-4388-799-A	(WG)...MOUNTED PCB, MAIN	C155	1-123-359-00	ELECT 47MF 20% 50V
905	*1-626-602-11	PC BOARD, VOL	C156	1-123-359-00	ELECT 47MF 20% 50V
906	Δ 1-559-819-11	(US)...CORD, POWER	C160	1-136-159-00	FILM 0.033MF 5% 50V
	Δ 1-556-091-00	(E)...CORD, POWER	C401	Δ 1-161-744-00	CERAMIC 0.01MF 400V
	Δ 1-556-035-00	(UK)...CORD, POWER	C601	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
	Δ 1-555-750-00	(AEP,WG)...CORD, POWER	C622	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
908	1-533-183-11	HOLDER, FUSE	C603	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
909	*1-628-354-00	(E)...PC BOARD, FUSE	C604	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
Δ BP401	*1-535-141-00	BASE POST 19MM (10MM PITCH) 4P	C605	1-108-389-00	(WG)...PE TEREPHTHALATE 0.1MF 10% 100V
BP402	*1-535-116-00	TERMINAL 3P	C606	1-108-389-00	(WG)...PE TEREPHTHALATE 0.1MF 10% 100V
BP403	*1-560-595-21	(E)...TERMINAL (WITH FUSE) 3P	C607	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C101	1-123-369-00	ELECT 4.7MF 20% 50V	C608	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C102	1-107-169-00	MICA 100PF 5% 500V	C609	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C103	1-162-287-31	CERAMIC 270PF 10% 50V	C610	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C104	1-107-026-00	MICA 5PF 0.5PF 500V	C611	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C105	1-123-359-00	ELECT 47MF 20% 50V	C612	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C106	1-123-359-00	ELECT 47MF 20% 50V	C614	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C107	1-123-382-00	ELECT 33MF 20% 50V	C651	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
C108	1-136-165-00	FILM 0.1MF 5% 50V	C652	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
C109	1-136-165-00	FILM 0.1MF 5% 50V	C653	1-164-075-11	(WG)...CERAMIC 150PF 10% 50V
C110	1-136-159-00	FILM 0.033MF 5% 50V	C657	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C111	1-136-163-00	FILM 0.068MF 5% 50V	C658	1-136-153-00	(WG)...FILM 0.01MF 5% 50V
C112	1-123-369-00	ELECT 4.7MF 20% 25V	CN1	1-536-707-21	TERMINAL BOARD, PUSH 2P (MONO SPEAKER)
C113	1-126-176-11	ELECT 220MF 20% 6.3V	CN101	*1-560-532-00	PIN, CONNECTOR 7P
C114	1-130-487-00	MYLAR 0.022MF 5% 50V	CN102	*1-564-599-11	PIN, CONNECTOR 8P
C115	1-124-477-11	ELECT 47MF 20% 16V	CN103	*1-564-599-11	PIN, CONNECTOR 8P
C116	1-124-477-11	ELECT 47MF 20% 16V	CN104	*1-562-327-00	SOCKET, CONNECTOR 3P
C117	1-126-307-11	ELECT 6800MF 20% 50V	CN105	*1-562-250-00	SOCKET, CONNECTOR 5P
C118	1-126-307-11	ELECT 6800MF 20% 50V	CN106	*1-562-327-00	SOCKET, CONNECTOR 3P
C119	1-126-052-11	ELECT 100MF 20% 50V	CN151	*1-561-651-00	SOCKET, CONNECTOR 7P
C121	1-126-052-11	ELECT 100MF 20% 50V	CN152	*1-562-573-11	SOCKET, CONNECTOR 8P
C131	1-136-156-00	FILM 0.018MF 5% 50V	CN153	*1-562-573-11	SOCKET, CONNECTOR 8P
C132	1-130-483-00	MYLAR 0.01MF 5% 50V	CN154	*1-562-327-00	SOCKET, CONNECTOR 3P
C133	1-123-356-00	ELECT 10MF 20% 25V	CN155	*1-564-508-11	PLUG, CONNECTOR 5P
C134	1-126-052-11	ELECT 100MF 20% 50V	CN156	*1-562-327-00	SOCKET, CONNECTOR 3P
C135	1-123-359-00	ELECT 47MF 20% 50V	Δ CNJ901	1-526-774-11	(E)...OUTLET, AC
C136	1-126-052-11	ELECT 100MF 20% 50V	Δ CNJ901	1-526-882-00	(US)...OUTLET, AC
C137	1-123-359-00	ELECT 47MF 20% 50V	D101	8-719-002-83	DIODE US1090M
C138	1-123-380-00	ELECT 1MF 20% 50V	D102	8-719-002-83	DIODE US1090M
C139	1-123-380-00	ELECT 1MF 20% 50V	D103	8-719-302-38	DIODE RBV-602-01
C141	1-124-485-11	ELECT 330MF 20% 35V			

Ref.No.	Part No.	Description
D104	8-719-002-83	DIODE US1090M
D105	8-719-200-77	DIODE 10E2N
D106	8-719-002-83	DIODE US1090M
D151	8-719-002-83	DIODE US1090M
D152	8-719-002-83	DIODE US1090M
D301	8-719-002-83	DIODE US1090M
D302	8-719-100-15	DIODE RD3.0E82
D501	8-719-310-83	DIODE SEL1824W
D502	8-719-310-75	DIODE SEL1524W-C
D503	8-719-310-75	DIODE SEL1524W-C
D504	8-719-310-75	DIODE SEL1524W-C
F401	△.1-532-203-00	(AEP,UK,WG)...FUSE, TIME-LAG (2A)
F401	△.1-532-579-00	(US).....FUSE, GLASS TUBE (4A)
F402	△.1-532-203-00	(E)...FUSE, TIME-LAG (2A)
F403	△.1-532-203-00	(E)...FUSE, TIME-LAG (2A)
IC101	8-749-900-34	IC STK4182MK2
IC102	8-759-111-68	IC UPC1237HA
IC103	8-759-113-18	IC UPC4574C
IC104	8-759-604-34	IC M5F7815
IC105	8-759-604-52	IC M5F7915
J101	1-565-406-21	JACK, PIN 1P (MONO INPUT FLAT)
J102	1-565-258-21	JACK, PIN 4P (MONO INPUT 3D/LINE OUT)
J103	1-565-320-11	JACK, PIN 6P (STEREO INPUT)
L101	*1-420-872-00	COIL, AIR CORE 1.9UH
L151	*1-420-872-00	COIL, AIR CORE 1.9UH
Q101	8-729-108-14	TRANSISTOR 2SA988F
Q102	8-729-108-14	TRANSISTOR 2SA988F
Q104	8-729-600-27	TRANSISTOR 2SC634SP
R001	1-249-496-11	CARBON 100K 5% 1/2W
R002	1-249-496-11	CARBON 100K 5% 1/2W
R102	1-246-545-00	CARBON 1M 5% 1/4W
R103	1-246-545-00	CARBON 1M 5% 1/4W
R104	1-246-545-00	CARBON 1M 5% 1/4W
R105	1-247-713-11	CARBON 1K 5% 1/4W
R106	1-249-466-11	CARBON 56K 5% 1/4W
R107	1-247-710-11	CARBON 560 5% 1/4W
R108	1-249-466-11	CARBON 56K 5% 1/4W
R109	1-247-710-11	CARBON 560 5% 1/4W
R110	1-247-717-11	CARBON 2.2K 5% 1/4W
R111	1-247-756-11	CARBON 2.2K 5% 1/2W
R112	1-247-713-11	CARBON 1K 5% 1/4W
R113	1-247-713-11	CARBON 1K 5% 1/4W
R114	1-247-716-11	CARBON 1.8K 5% 1/4W
R115	△.1-217-151-00	RES, METAL PLATE 0.22 2W
R116	1-247-726-11	CARBON 33K 5% 1/4W
R117	1-247-727-11	CARBON 10 5% 1/2W
R118	1-247-727-11	CARBON 10 5% 1/2W
R119	1-249-465-11	CARBON 47K 5% 1/4W
R121	1-247-725-11	CARBON 10K 5% 1/4W
R123	1-249-467-11	CARBON 68K 5% 1/4W
R124	1-247-717-11	CARBON 2.2K 5% 1/4W
R125	1-249-469-11	CARBON 100K 5% 1/4W
R126	1-247-725-11	CARBON 10K 5% 1/4W
R127	△.1-249-458-11	CARBON 8.2 5% 1/4W F
R128	1-247-724-11	CARBON 8.2K 5% 1/4W
R129	1-247-713-11	CARBON 1K 5% 1/4W
R130	1-249-466-11	CARBON 56K 5% 1/4W
R131	1-244-860-11	CARBON 300 5% 1/2W
R133	1-244-860-11	CARBON 300 5% 1/2W
R134	1-247-751-11	CARBON 820 5% 1/2W
R135	1-247-713-11	CARBON 1K 5% 1/4W

Ref.No.	Part No.	Description
R136	1-249-469-11	CARBON 100K 5% 1/4W
R137	1-247-713-11	CARBON 1K 5% 1/4W
R138	1-249-469-11	CARBON 100K 5% 1/4W
R139	1-247-725-11	CARBON 10K 5% 1/4W
R140	1-247-717-11	CARBON 2.2K 5% 1/4W
R141	1-247-713-11	CARBON 1K 5% 1/4W
R142	1-249-604-11	CARBON 150K 5% 1/4W
R143	1-249-604-11	CARBON 150K 5% 1/4W
R144	1-247-713-11	CARBON 1K 5% 1/4W
R145	1-247-713-11	CARBON 1K 5% 1/4W
R146	1-247-887-00	CARBON 220K 5% 1/4W
R147	1-247-752-11	CARBON 1K 5% 1/2W
R148	1-247-752-11	CARBON 1K 5% 1/2W
R152	1-246-545-00	CARBON 1M 5% 1/4W
R153	1-246-545-00	CARBON 1M 5% 1/4W
R154	1-246-545-00	CARBON 1M 5% 1/4W
R155	1-247-713-11	CARBON 1K 5% 1/4W
R156	1-249-466-11	CARBON 56K 5% 1/4W
R157	1-247-710-11	CARBON 560 5% 1/4W
R158	1-249-466-11	CARBON 56K 5% 1/4W
R159	1-247-710-11	CARBON 560 5% 1/4W
R160	1-247-756-11	CARBON 2.2K 5% 1/2W
R161	1-247-756-11	CARBON 2.2K 5% 1/2W
R164	1-247-716-11	CARBON 1.8K 5% 1/4W
R165	△.1-217-151-00	RES, METAL PLATE 0.22 2W
R166	1-247-726-11	CARBON 33K 5% 1/4W
R167	1-247-727-11	CARBON 10 5% 1/2W
R168	1-247-727-11	CARBON 10 5% 1/2W
R169	1-249-466-11	CARBON 56K 5% 1/4W
R187	1-247-713-11	CARBON 1K 5% 1/4W
R188	1-249-469-11	CARBON 100K 5% 1/4W
R189	1-247-725-11	CARBON 10K 5% 1/4W
R190	1-247-717-11	CARBON 2.2K 5% 1/4W
R191	1-247-713-11	CARBON 1K 5% 1/4W
R201	1-247-756-11	CARBON 2.2K 5% 1/2W
R501	1-247-703-11	CARBON 180 5% 1/4W
R601	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R602	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R603	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R604	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R651	1-247-727-11	(WG)...CARBON 10 5% 1/2W
R652	1-247-727-11	(WG)...CARBON 10 5% 1/2W
RV301	1-238-176-11	RES, VAR, CARBON 100K/100K (ATTENUATOR)
RY101	1-515-533-11	RELAY
RY102	1-515-614-11	RELAY
RY301	1-515-614-11	RELAY
S201	1-571-545-11	SWITCH, ROTARY (SPEAKERS)
S301	1-571-546-11	SWITCH, ROTARY (STEREO INPUT)
S401	△.1-554-920-11	SWITCH, PUSH (AC POWER)(1 KEY)(POWER)
S402	△.1-570-307-11	(E)...SWITCH, VOLTAGE CHANGE (VOLTAGE SELECTOR)
T901	△.1-449-434-11	(US).....TRANSFORMER, POWER
T901	△.1-449-436-11	(AEP,WG)...TRANSFORMER, POWER
T901	△.1-449-435-11	(E).....TRANSFORMER, POWER
T901	△.1-449-445-11	(UK).....TRANSFORMER, POWER
TB1	1-536-706-00	TERMINAL BOARD (SPEAKER)

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

ACCESSORY & PACKING MATERIAL

△1-526-565-00	(E)...AC PLUG ADAPTOR
*3-701-948-17	(EXCEPT US)...LABEL, FUSE
*3-701-030-00	LABEL, SERIAL NUMBER
3-703-450-01	INSTRUCTION
*3-704-346-01	SHEET (STANDARD), PROTECTION
3-786-064-11	MANUAL, INSTRUCTION
*3-346-378-01	(EXCEPT US)...INDIVIDUAL CARTON
*4-921-373-11	(US).....INDIVIDUAL CARTON
*4-921-311-01	(EXCEPT US)...CUSHION
*4-921-371-01	(US).....CUSHION

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Block Diagram

